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## NOTES ON SERPENTS IN THE FAMILY COLUBRIDÆ.

BY JOSEPH C. THOMPSON, SURGEON, U. S. N.

It is a curious fact that during the last two decades one of the rarest things in the literature dealing with serpents is a detailed account of an individual specimen. Reference is not made to original descriptions of a type, as the majority of these are full and satisfactory, but anything like the records left by Duméril and Bibron or by Cope of a particular specimen are now made by few authors. The need for them is a very real one, both to students of zoögeography in their efforts to outline the distribution of allied forms, and to those engaged in the gathering of data relating to the range of variation exhibited by a given species.

*Trirhinopholis styani* Boulenger.

No. 26,786 Cal. Ac. Sci. Coll. Rev. C. Barlow. Waung Wan Shan, Chekiang Province, China. Male; total length 205, tail 29 mm.

*Squamation*.—Scales in 15 rows, continuous throughout the body, smooth, without pits, those in the outer series rounded behind and twice as wide as those in the dorsal series. Gastrosteges 118, abnormally broad. Anal entire. Urosteges 27 pairs. Nasal divided, entirely surrounding the nostril. Loreal absent. Preocular 1. Postoculars 2. Anterior temporals 2, the lower not in contact with the postoculars; posterior 2. Supralabials 6, the third and fourth entering the eye. Infralabials on the right side 5, the normal fourth and fifth fused and with an incisure from the upper border; on the left side 6, the first pair widely separated by the mental which is in contact with the chin-shields. Geniæ in two pairs, anterior the larger and touching three labials, the posterior touch the third and fourth.

*Anatomy*.—Maxillary with 20 small, equal teeth. Palatine with 10 teeth. Pterygoid with 22 teeth, only a trifle smaller than those on the maxillary. Dentary with 20 equal teeth, the posterior third of the bone is free, as in *Polyodontophis*. Hypophyses present throughout the vertebral column. Eye 2 mm. in diameter and 1 mm. distant from the mouth. Rudimentary lung present. Apex of the heart at the 23d gastrostegæ, in terms of body vertebræ this is 19.5%

down the column. Liver extending from the 31st to the 65th gastrosteg. Head flat and pointed. Body vertically compressed throughout; just behind the heart it is 5.5 mm. deep and 8 mm. broad. Tail short, flat, and pointed.

*Habitat*.—Heretofore known only by the two type specimens which were captured in Fokien Province, China.

***Oxyrhabdium modestum*** (Duméril and Bibron).

No. 15,235 Cal. Ac. Sci. Philippine Islands. Female; total length 216, tail 42 mm.

*Squamation*.—Scales in 15 continuous rows, smooth, without apical pits, broader than long; outer row slightly enlarged and rounded behind. Gastrosteges 163. Anal entire. Urosteges 62 pairs. Rostral 1.1 mm. deep, 1 mm. wide; portion visible from above strongly concave and with the borders raised well above the level of the surrounding shields; below it is deeply incised. Nasals divided, the posterior the larger and with raised edges. Internasals .8 mm. long and .6 mm. broad, mutual suture one-third the length of that between the prefrontals. Frontal 3.3 mm. long, 2.5 mm. wide, 2.8 mm. distant from the rostral; facet for supraocular concave. Parietals 3.3 mm. long, 2.5 broad; narrowed behind. Loreal 2.2 mm. long, .8 mm. broad, anterior border in line with the suture between the second and third labial; behind an acute angle between the preocular and the fifth labial. Preocular 1, on each side, .8 mm. long, 1.1 deep. Postoculars 2; superior the wider; inferior narrow and excluding the seventh labial from entering the eye. Temporals anterior 1, twice as wide as broad, inclined downward and forward; posterior 2. Supralabials 8, the fifth and sixth entering the eye; the anterior four are very small, the first one-half the size of the second, the second, third and fourth equal, the eighth the largest being 2.7 mm. long. Mental very short, rounded behind. Infra-labials right 8, left 9, the additional shield due to the division of the sixth, the fifth the largest. Geniials a single pair, 2.6 mm. long, in contact with five labials. Gular shields in two pairs, shorter than wide; these followed by the first gastrosteg, the anterior border of which is below the posterior border of the eye.

*Coloration*.—Above uniform iridescent light brown, head a trifle darker, the trace of a nuchal band. Below yellow, line of demarcation sharp, on the body along the lower border of the first scale row, on the head along the supralabials.

*Anatomy*.—Body laterally compressed, at the middle being 7.8 mm. deep, and 6.5 mm. wide. Head slightly distinct from neck, width

6.3 mm. interorbital region 3.7 mm., interval between nostrils 1.1 mm. Eye with vertically subelliptic pupil, diameter 1.7 mm., its distance from the mouth .8 mm. Maxillary bone with 33 teeth; reaching beyond the palatine. Ectopterygoid bone short, ectopterygo-maxillary joint at the level of the second, and ectopterygo-ptyergoid joint at the level of the seventh tooth on the pterygoid bone. Palatine bone with 20 teeth; no vomerine process; maxillary process a broad elongate shelf extending back to the level of the 13th tooth, at the articulation with the maxillary bone its external edge is incised, before and behind the joint an externally directed process; on the under surface of this shelf at the base of each process is a foramen, these are the entrance and the exit to a canal which perforates the bone and gives passage to a branch of the palatine artery; palatopterygoid joint oblique from within out, the posterior tip of the palatine bone reaching to the level of the last tooth on the maxilla. Pterygoid bone with 30 teeth which extend to within 1.1 mm. of the posterior tip of the bone. Apex of the heart at the level of the 37th gastrostege, equivalent to 22.7% down the spinal column. No rudimentary right lung or extension of the pulmonary tissue along the trachea. Liver extends from the 45th to the 88th gastrostege.

*Habits.*—The stomach contained an earthworm belonging to the family *Perichætidæ*.

*Habitat.*—Recorded from Luzon, Samar, Leyte, Calamianes, Dinagat, and Mindanao.

*Lystrophis semicinctus* (Duméril and Bibron).

No. 14,571 Cal. Ac. Sci. (Purchased.) Tucuman, Argentine. Male; total length 455, tail 63 mm.

*Squamation.*—Scales in 21 rows anteriorly, reduced to 19 and 17 posteriorly; the sequence of suppression is the V row followed by the IV row; the gastrostege level at which the rows terminate is nearly the same on each side:

Rows.	Suppressed Row.	Right.	Left.
21.....	V.....	97	99
19.....	IV.....	112	114
17 continued.			

each scale is smooth, and with a single apical pit; the lateral and dorsal scales are elongate, and in very oblique transverse series, the tip of each is well anterior to the middle of the scale below and behind it; the scales in the first to the fifth rows are broad, not in markedly oblique series, the tip of each scale is anterior to the centre of the

scale that is below and behind it. Gastrostege 156. Anal divided. Urostege 34 pairs, the second to the seventh and the ninth entire. Rostral reaching to the azygos prefrontal, separating the internasals and lateral prefrontals, above with a sharp median keel, anterior inferior surface flat, inclined upward at an angle of  $45^\circ$ , and bordered by a sharp edge. Frontal with a small incisure from the middle of the anterior border. Preoculars 2, postoculars 2. Anterior temporals 2, posterior 2. Supralabials 8, the fourth and fifth entering the eye. Infralabials 11, the first pair broadly in contact. Anterior genaeals three times the size of the posterior; touching five labials.

*Anatomy*.—Posterior vertebræ with a low rounded keel. Maxillary with 5 small teeth gradually increasing in size posteriorly; these followed by a space that would support two more; behind 2 enlarged teeth situated below the posterior rim of the pupil, a trifle longer than the space, curved, and with a sharp cutting edge behind. Palatine with 5 teeth; tip of bone reaching to the interval between the second and the third maxillary tooth. Pterygoid with 12 teeth; pterygo-palatine joint at the interval between the enlarged maxillary teeth. Dentary with 14 equal teeth. Heart far forward, apex opposite the 26th gastrostege, in terms of body vertebræ this is 16.7% down the column. Left lung begins abruptly at the base of the ventricle, without free apex or extension of the pulmonary tissue along the trachea. Liver extending from the 36th to the 64th gastrostege. Hemipenis 20 mm. long, divided, sulcus furcate, spinous, and with an apical disk. Compared with the figure of the organ in *L. dorbigny* (Duméril and Bibron)<sup>1</sup> this form is less deeply divided, the divisions reaching to one-third, instead of one-half the distance from the tip of the organ to the bifurcation of the sulcus, the apical disk is larger and with a wider free border. Eye 2.5 mm. in diameter, its distance from the mouth 3.3 mm.

**Oligodon vertebralis** Günther.

No. 15,808 Cal. Ac. Sci. Coll. A. Seale, Esq. Puerto Princesa, Palawan, P. I. Female; total length 159, tail 24 mm.

*Squamation*.—Scales in 15 rows, finely striate, without keels or pits. Gastrostege 139. Anal divided. Urostege 36 pairs. Rostral one and one-half times broader than long, portion seen from above two-thirds its distance from the frontal. Suture between the internasals twice as long as that between the prefrontals. Frontal one-

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<sup>1</sup> 1900: Cope, *Croc., Liz., Sn. No. Am., Rept. U. S. Nat. Mus.*, 1898, Pl. XXIV, fig. 6.

third longer than broad, distance from the rostral less than one-half its width, a trifle shorter than the parietals. Nasal divided into two equal portions. Loreal nearly square, not quite as deep as the diameter of the pupil. Preocular 1, postoculars 2. Temporals anterior 1, posterior 1. Supralabials 7, the third and fourth entering the eye, the sixth the deepest, and touching the posterior temporal. Infralabials 8, the first pair in contact behind the mental. Anterior geneials nearly twice as large as the posterior, in contact with four labials.

*Coloration*.—Body above brown, with a vertebral series of ten round or oblong, yellow, black-edged spots; tail with two; numerous yellow dots having a tendency to be arranged in two to three transverse rows between each dorsal spot; the anterior chevron mark interrupted over the frontal; on the parietals behind the posterior chevron a small dot. Under surface of head white, throat with a break in the posterior chevron; body beneath yellow.

*Anatomy*.—Pupil round. Heart apex at the level of the 34th gastrostege, in terms of body vertebræ this is 24% down the spinal column. Anterior tip of the liver at the 43d gastrostege.

Museo de Santa Toma, Manila. Palawan, Philippine Islands. Male; total length 308, tail 54 mm.

*Squamation*.—Scales in 15 continuous rows. Gastrosteges 136. Anal divided. Urosteges 37 pairs and the terminal pointed scale. Internasal suture as long as the prefrontal suture. Frontal as long as the parietals. Preocular 1, postoculars 2. Temporals anterior 1, posterior 2. Supralabials 7 on the left side and 6 on the right, the fifth and sixth fused, the third and fourth entering the eye.

*Coloration*.—Body with ten, tail with two, yellow black-edged dorsal spots.

Museo de Santa Toma, Manila. Palawan, Philippine Islands. Male; total length 340, tail 64 mm.

*Squamation*.—Scales in 15 continuous rows. Gastrosteges 143. Anal divided. Urosteges 41 pairs, and the terminal pointed scale. Preocular 1, postoculars 2. Temporals anterior 1, posterior 2.

*Coloration*.—Body with ten, tail with three, yellow black-edged vertebral spots.

*Habitat*.—Heretofore known only by the type which came from Banjermasin in the extreme south of Borneo.

*Oligodon schadenbergi* Boettger.

No. 15,281 Cal. Ac. Sci. Mindanao, Philippine Islands. Female; total length 226, tail 39 mm.

*Squamation*.—Scales in 15 rows, continuous throughout, finely striate, without keels or pits. Gastrostege 137. Anal divided. Urostege 42 pairs. Rostral one and one-half times broader than long. Suture between the internasals .6 mm., two-thirds of that between the prefrontals. Frontal 3.9 mm. long, 3 mm. broad, its distance from the rostral 1.5 mm. Parietal 4.2 mm. long. Preocular 1, postoculars 2. Temporals anterior 1, posterior 2. Supralabials 7, third and fourth entering the eye; the sixth the highest. Infra-labials 8, the first pair in contact behind the mental. Anterior genieals touching four labials, one and one-half times as large as the posterior.

*Coloration*.—Body dark brown above, with a vertebral series of twelve very small yellow, black-edged spots, tail with two; between each pair of spots are three transverse rows of minute yellow dots. Under surface orange. Head with two chevron-shaped bands, the posterior twice the broader; beneath with black V-shaped mark on the anterior genieals, a short longitudinal line on the throat, posterior chevron broadly interrupted.

*Anatomy*.—Heart apex at the level of the 28th gastrostege, in terms of body vertebræ this is 20.4% down the column. Anterior tip of the liver at the 39th gastrostege.

*Habitat*.—Previously known from three specimens secured on Busuanga Island, Calamianes Group, Philippine Islands.

This species as at present defined cannot be separated from *O. vertebralis* by any single isolated character. The few specimens recorded show that the one to which Boettger's description applies may be distinguished from a typical *O. vertebralis* in the following details: internasal suture shorter than the prefrontal; lateral borders of the frontal converge posteriorly, instead of being parallel; loreal broader than deep; two posterior temporals, sixth supralabial lower and not reaching to the superior-posterior temporal; the vertebral series of spots are much smaller and the transverse rows of minute dots are more distinct. These differences are each well within the range of individual variation. The most pronounced character is the absence of the large spots on the back of the adult *O. schadenbergi*, but it does not hold for the young. The distribution of the two broadly overlap in the Southern Philippines. As more specimens are secured there will probably be found examples that will form a complete intermediate series.

*U. S. F. S. Albatross, March 17, 1913.*